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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,228	LIU, ENHUI	
	Examiner	Art Unit	
	BENJAMIN ELLIOTT	2419	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11-20* is/are rejected.

7)☒ Claim(s) *10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/29/2006 and 6/18/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-20 have been examined and are pending for this application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first and second paragraphs of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4, 5, and 17-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

With regards to the terms “service control equipment” and “resource control equipment”, the specification does not clearly or exactly point to any particular entity or device for handling these types of control. Examiner has taken this term to mean any device that acts as a proxy server.

4. Claims 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims use "means for" language, and the specification does not identify any device, apparatus, application etc. for which the means for language may be implemented. The claim language is simply repeating the description in the specification yielding no definitive means for implementing the steps listed for the apparatus, the edge router, and the system.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-3, 6-9, 11-15,17, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Publication 2005/0066053 A1 to McDysan (hereinafter "McDysan") and further in view of US Patent 7,065,084 B2 to Seo (hereinafter "Seo").

As per Claims 1, 17, and 18, McDysan discloses **a method, an apparatus, an edge router, and a system for providing quality of service (QoS) guarantee, wherein the method comprises the steps of:**

[[A]] creating a service traffic flow classification table (Figure 6b; [0047]. The boundary router (40) utilizes a classifier that classifies packets and places them in a classifier table (232).);

[[B]] establishing a plurality of label switching paths (Figure 6b; [0046]. Each port facing the core network of the boundary router is partitioned into a plurality of logical tunnels. The tunnels are implemented using MPLS (multi-protocol label switching) protocol.);

[[D]] classifying and conditioning the service traffic flows entering into a core network at a downlink interface of an edge router according to the service traffic flow classification table (Figure 6b; [0047]. The classifier (230) classifies traffic received from the access network through the boundary router to the core network. [0049]. Packets are directed to the output port queue based on the DSCP (DiffServ code point). Packets marked with a particular QoS value are placed in a queue based on the value.).

McDysan is silent on the edge routers having the ability of **[[C]] configuring the attributes of the label switching paths** and **[[E]]forwarding the processed service traffic flows by an uplink interface of the edge router according to the attributes of the label switching paths**.

Seo teaches, with reference to Figures 1 and 2, and Col. 4, lines 5-67 and Col. 5, lines 1-8, describes a label edge router (LER) that includes a traffic engineering operating and controlling function block (TEOCFB; Col. 4, lines 50-52). The LERs are located on the edge of the MPLS network and interact with networks other than the MPLS network (Col. 4, lines 20-23). The TEOCFB functions to collect statistical data on LSPs (label switching paths) and manage this information. The TEOCFB also functions to perform CR-LSP (constraint route label switching path) calculations path calculations for path reoptimization. The TEOCFB further functions to provide a QoS policy function for provision of a network provider's QoS and policy (Col. 5, lines 3-11). The LER receives an IP packet from a network, determines the LSP, and forwards it to either another LER or a LSR (label switch router) within the network (Col. 4, lines 20-34).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of McDysan to include **configuring the attributes of the label switching paths** and **forwarding the processed service traffic flows by an uplink interface of the edge router according to the attributes of the label switching paths** taught by Seo, wherein LSPs are configured by traffic engineering, to properly manage path information and QoS information for a variety of high-quality services (Col. 2, lines 24-28, and lines 32-39).

As per Claim 2, McDysan discloses **the method according to claim 1, wherein the step [[A]] of creating a service traffic flow classification table comprises the steps of:**

[[A1.]] obtaining service traffic flow information ([0008]. Utilizing the protocol

Diffserv, a specific classification of service is determined based on the DSCP (Diffserv code point).);

[[A2.]] creating the service traffic flow classification table according to the obtained service traffic flow information (Figure 6b; [0047]. The value of the DSCP is placed in a classification table, 232a.).

As per Claim 3, McDysan discloses **the method according to claim 2, wherein the step [[A1]] of obtaining service traffic flow information is:**

configuring the service traffic flow information statically (Figure 6b; [0048]. Forwarding tables, 234a-234c, in conjunction with the classification table, 232a, can be populated by static configuration.).

As per Claim 6, McDysan discloses **the method according to claim 1, wherein the step [[B]] of establishing a plurality of label switching paths is:**

configuring the label switching paths statically at the uplink interfaces of the edge router ([0048]. Forwarding tables for label paths can be populated by static configuration.).

As per Claim 7, McDysan is silent on, but Seo discloses **the method according to claim 1, wherein the step [[B]] of establishing a plurality of label switching paths is: establishing the label switching paths dynamically via constraint-routing label distribution protocol (CR-LDP) or resource reservation protocol-traffic engineering (RSVP-TE) at the uplink interfaces of the edge router** (Seo; Col. 5, lines 32-36. The path profile and QoS profile are based on CR-LDP and RSVP-TE.).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of McDysan to include establishing the label paths by way of CR-LDP or RSVP-TE as taught by Seo because the MPLS system typically employs these two signal protocols (Col. 1, lines 62-65).

As per Claim 8, McDysan discloses **the method according to claim 1, wherein the step [[B]] of establishing a plurality of label switching paths further comprises the step of:**

constructing an edge-to-edge label switching path concatenated pipe or a virtual multi- protocol label switching network on the core network by using the label switching paths (Figure 6b; [0046]. The physical ports facing the core network are logically partitioned into a plurality of logical tunnels. The tunnels are implemented as a set of stacked MPLS labels.).

As per Claim 9, McDysan is silent on but Seo **discloses the method according to claim 1, wherein the step [[C]] of configuring the attributes of the label switching paths is:**

configuring traffic class, priority, QoS class, bandwidth attribute of the label switching paths by network capacity planning and traffic engineering statistics (Seo; With reference to Figures 1 and 2, and Col. 4, lines 5-67 and Col. 5, lines 1-8, describes a label edge router (LER) that includes a traffic engineering operating and controlling function block (TEOCFB; Col. 4, lines 50-52). The LERs are located on the

edge of the MPLS network and interact with networks other than the MPLS network (Col. 4, lines 20-23). The TEOCFB functions to collect statistical data on LSPs (label switching paths) and manage this information. The TEOCFB also functions to perform CR-LSP (constraint route label switching path) calculations path calculations for path reoptimization. The TEOCFB further functions to provide a QoS policy function for provision of a network provider's QoS and policy (Col. 5, lines 3-11). The LER receives an IP packet from a network, determines the LSP, and forwards it to either another LER or a LSR (label switch router) within the network (Col. 4, lines 20-34).).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of McDysan to include **configuring the attributes of the label switching paths** and **forwarding the processed service traffic flows by an uplink interface of the edge router according to the attributes of the label switching paths** taught by Seo, wherein LSPs are configured by traffic engineering, to properly manage path information and QoS information for a variety of high-quality services (Col. 2, lines 24-28, and lines 32-39).

As per Claim 11, McDysan discloses **the method according to claim 10, wherein the step [[D]] of classifying and conditioning the service traffic flows entering into a core network at a downlink interface of an edge router according to the service traffic flow classification table comprises the steps of:**
IID1 .]] obtaining the service traffic flow identification ([0008]. Utilizing the protocol Diffserv, a specific classification of service is determined based on the DSCP (Diffserv

code point).);

[[D2.]] looking up the service traffic flow classification table according to the service traffic flow identification ([0047]. Classifier tables are accessed based on the DSCP values.);

[[D3.]] classifying and conditioning the service traffic flows entering into the core network according to the corresponding service traffic flow information in the service traffic flow classification table (Figure 6b; [0047]. The classifier (230) classifies traffic received from the access network through the boundary router to the core network. [0049]. Packets are directed to the output port queue based on the DSCP (DiffServ code point). Packets marked with a particular QoS value are placed in a queue based on the value.).

As per Claim 12, McDysan **discloses the method according to claim 11, wherein the step [[D3]] of classifying and conditioning the service traffic flows entering into the core network according to the corresponding service traffic flow information in the service traffic flow classification table comprises:**

[[D31]] classifying and marking the service traffic flows according to the corresponding priority and QoS class ([0049]. Packets are sent to an output queue corresponding to the DSCP value, for example, with reference to Figure 6b, packets marked with QoS class associated with DSCP 101 are placed in Q2. Schedulers then send packets from queues based on priority (priority in schedulers are described in [0038])).;

[[D32.]] shaping and policing the service traffic flows according to the

corresponding bandwidth requirement (Figure 8; [0052]. Policers, shapers, and schedulers are used in a detailed QoS-aware boundary router.);

[[D33.]] selecting the forwarding mode and path of the service traffic flows according to the corresponding outgoing aggregation path information (Figure 8; [0055]. Forwarding tables provide routes for virtual private networks, and Internet forwarding tables provide information for routes to logical paths and tunnel paths (i.e. label paths).).

As per Claim 13, McDysan discloses **the method according to claim 12, wherein the forwarding mode of the service traffic flow comprises:**

best-effort delivery in accordance with network protocols (Figure 8; [0053]. A logical port of the boundary router provides access to best-effort traffic from the Internet.);

delivery through the corresponding label switching paths of this class of traffic ([0054]. The logical ports are partitioned into multiple logical tunnels that are implemented using MPLS paths.).

As per Claim 14, McDysan discloses **the method according to claim 13, wherein the step [[E]] of forwarding the processed service traffic flows by an uplink interface of the edge router according to the attributes of the label switching paths comprises:**

[[El .]] steering the service traffic flow to the egress router of the Internet core network via network protocols when the best-effort delivery in accordance with network protocols is selected as the forwarding mode of the service traffic flow;

[[E2.]] steering the service traffic flow to the egress router of the Internet core network through the label switching path concatenated pipe or the virtual multi-protocol label switching network when the delivery through the corresponding label switching path of this class of traffic is selected as the forwarding mode of the service traffic flow (Figure 8; [0055]. The forwarding function, 178, switches packets between logical ports and tunnels for access to VPNs and the Internet.).

As per Claim 15, McDysan is silent on, but Seo discloses **the method according to claim 1, wherein the method further comprises the step of: [[F.]] modifying the service traffic flow classification table according to change of the service traffic flow when the service traffic flow is changed** (Seo; Figure 2; Col. 6, lines 45-50. The command based system allows for modification of the ER/-CR-LSP (explicit routed or constraint routed label switching path. Figure 3; Col. 7, lines 21-26. The subscriber tables contain the information to modify the ER/-CR-LSP.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of McDysan to include modifying the classification table when the service flow changes as taught by Seo because the equipment that employs the protocols of CR-LDP and RSVP-TE use ER-LSP and an LSP fault function that allows re-routing of traffic when a fault occurs (Col. 1, lines 61-67 and Col. 2, lines 1-4).

As per Claim 20, McDysan discloses **the method according to claim 1, wherein the core network is an IP network** (Figure 8; [0053]. A logical port of the boundary router provides access to best-effort traffic from the IP public network.).

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan and Seo as applied to claim 1 above, and further in view of US Patent 6,804,222 B1 to Lin et al. (hereinafter "Lin").

As per Claim 16, McDysan and Seo are silent on, but Lin discloses **the method according to claim15, wherein the step [IF]] of modifying the service traffic flow classification table when the service traffic flow is changed comprises: obtaining and adding the service traffic flow information of a service session into the service traffic flow classification table when the session is established; canceling the service traffic flow information of the service session from the service traffic flow classification table when the service session is ended** (Lin; Figure 2; Col. 9, lines 63-67 and Col. 10, lines 1-6. The frame classification entity (FEC) maintains a timer for each entry in its classification table. It can detect termination of a session and the inception of a session by resetting the timer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of McDysan and Seo to add a means for detecting the beginning and end to a service session as taught by Lin to verify the

beginning, modification, or termination of a session based QoS parameters (Col. 6, lines 18-23).

9. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan and Seo and further in view of US Patent 6,606,311 B1 to Wang et al. (hereinafter "Wang").

As per Claim 4, McDysan and Seo are silent on, but Wang discloses **the method according to claim 2, wherein the step [[A 1]] of obtaining service traffic flow information is: directly obtaining the service traffic flow information from a service control equipment** (Figure 2, Col. 4, lines 34-36. Figure 2 shows the Adaptation Server sending packet id information to the QoS application layer of an MSC (mobile switching center) device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of McDysan and Seo to obtain service traffic flow information from a service control equipment as taught by Wang to properly apply a specific QoS class to that particular packet flow before reception at the QoS layer of the network architecture for transmitting packets to the base station or terminal (Col. 4, lines 38-41).

As per Claim 5, McDysan and Seo are silent on, but Wang discloses **the method according to claim 2, wherein the step [[A1]] of obtaining service traffic flow information_is: indirectly obtaining the service traffic flow information from the service control equipment through a resource control equipment** (Figure 2; Col. 4,

lines 30-34. Adaptation control utilizes resource control to determine specific QoS classes of data packets. The packet is sent through the QoS layer onto a Mux for processing.).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of McDysan and Seo to obtain service traffic flow information from a service control equipment through the use of a resource equipment as taught by Wang to properly apply a specific QoS class to that particular packet flow before reception at the QoS layer of the network architecture for transmitting packets to the base station or terminal (Col. 4, lines 38-41).

10. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Publication 2005/0066053 A1 to McDysan (hereinafter "McDysan") in view of US Patent 7,065,084 B2 to Seo (hereinafter "Seo"), and further in view of US Patent 6,606,311 B1 to Wang et al. (hereinafter "Wang").

As per Claim 19, McDysan discloses **a system for providing quality of service (QoS) guarantee, comprises an edge router, wherein the edge router comprises: a service traffic flow information obtaining means, for creating a service traffic flow classification table** (Figure 6b; [0047]. The boundary router (40) utilizes a classifier that classifies packets and places them in a classifier table (232).);
a label switching path establishing means, for establishing a plurality of label switching paths (Figure 6b; [0046]. Each port facing the core network of the boundary

router is partitioned into a plurality of logical tunnels. The tunnels are implemented using MPLS (multi-protocol label switching) protocol.);

a first performing means, for classifying and conditioning the service traffic flows entering into the core network according to the service traffic flow classification table (Figure 6b; [0047]. The classifier (230) classifies traffic received from the access network through the boundary router to the core network. [0049]. Packets are directed to the output port queue based on the DSCP (DiffServ code point). Packets marked with a particular QoS value are placed in a queue based on the value.).

McDysan is silent on **the edge routers having the ability of a label switching path configuring means, for configuring the attributes of the label switching paths** and **a second performing means, for forwarding the processed service traffic flow according to the attributes of the label switching paths**.

Seo teaches, with reference to Figures 1 and 2, and Col. 4, lines 5-67 and Col. 5, lines 1-8, describes a label edge router (LER) that includes a traffic engineering operating and controlling function block (TEOCFB; Col. 4, lines 50-52). The LERs are located on the edge of the MPLS network and interact with networks other than the MPLS network (Col. 4, lines 20-23). The TEOCFB functions to collect statistical data on LSPs (label switching paths) and manage this information. The TEOCFB also functions to perform CR-LSP (constraint route label switching path) calculations path calculations for path reoptimization. The TEOCFB further functions to provide a QoS policy function for provision of a network provider's QoS and policy (Col. 5, lines 3-11). The LER

receives an IP packet from a network, determines the LSP, and forwards it to either another LER or a LSR (label switch router) within the network (Col. 4, lines 20-34).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of McDysan to include **the edge routers having the ability of a label switching path configuring means, for configuring the attributes of the label switching paths** and **a second performing means, for forwarding the processed service traffic flow according to the attributes of the label switching paths** taught by Seo, wherein LSPs are configured by traffic engineering, to properly manage path information and QoS information for a variety of high-quality services (Col. 2, lines 24-28, and lines 32-39).

McDysan and Seo are both silent on the system also providing **a service control equipment and a resource control equipment**.

Wang discloses adaptation control utilizes resource control to determine specific QoS classes of data packets. Adaptation control is used to identify the packet. The packet is sent through the QoS layer onto a Mux for processing (Figure 2; Col. 4, lines 30-36).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of McDysan and Seo to obtain service traffic flow information from a service control equipment through the use of a resource equipment as taught by Wang to properly apply a specific QoS class to that particular packet flow before reception at the QoS layer of the network architecture for transmitting packets to the base station or terminal (Col. 4, lines 38-41).

Allowable Subject Matter

11. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. Prior art made of record not relied upon:

US patent Publication 2004/0223498 A1 to Sanderson teaches a communication network that converges services over a VPN.

US Patent 7,283,529 B2 to Basso et al. teaches a system and method for supporting label switching paths for a VPN over a MPLS network.

US Patent 6,891,842 B2 to Sahaya et al. teaches a system and method for enabling mobile edge services of a network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN ELLIOTT whose telephone number is (571)270-7163. The examiner can normally be reached on Monday thru Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571)272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BE/
Examiner, Art Unit 2419

/Hassan Kizou/

Supervisory Patent Examiner, Art Unit 2419